

SEQUENCE LISTING

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<120> GFR-alpha-1-RET Specific Agonists and Methods Therefor

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<210> 1

<211> 89

<212> PRT

<213> Homo sapiens

<400> 1

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Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala Glu Leu Gly Leu Gly
 1           5           10           15
Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
          20           25           30
Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala Leu Ala Arg Leu Gln
          35           40           45
Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys Arg Pro Thr Arg Tyr
 50           55           60
Thr Asp Val Ala Phe Leu Asp Asp Arg His Arg Trp Gln Arg Leu Pro
 65           70           75           80
Gln Leu Ser Ala Ala Ala Cys Gly Cys
          85

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<210> 2

<211> 89

<212> PRT

<213> Mouse

<400> 2

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Cys Arg Leu Trp Ser Leu Thr Leu Pro Val Ala Glu Leu Gly Leu Gly
 1           5           10           15
Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
          20           25           30
Pro Gln Glu Ala Arg Thr Gln His Ser Leu Val Leu Ala Arg Leu Arg
          35           40           45
Gly Arg Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro Thr Ser Tyr
 50           55           60
Ala Asp Val Thr Phe Leu Asp Asp Gln His His Trp Gln Gln Leu Pro
 65           70           75           80
Gln Leu Ser Ala Ala Ala Cys Gly Cys
          85

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<210> 3
 <211> 89
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 <213> RAT

<400> 3
 Cys Arg Leu Trp Ser Leu Thr Leu Pro Val Ala Glu Leu Gly Leu Gly
 1 5 10 15
 Tyr Ala Ser Glu Glu Lys Ile Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Gln Glu Val Arg Thr Gln His Ser Leu Val Leu Ala Arg Leu Arg
 35 40 45
 Gly Gln Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro Thr Ser Tyr
 50 55 60
 Ala Asp Val Thr Phe Leu Asp Asp His His His Trp Gln Gln Leu Pro
 65 70 75 80
 Gln Leu Ser Ala Ala Ala Cys Gly Cys
 85

<210> 4
 <211> 93
 <212> PRT
 <213> Homo sapiens

<400> 4
 Cys Val Leu Thr Ala Ile His Leu Asn Val Thr Asp Leu Gly Leu Gly
 1 5 10 15
 Tyr Glu Thr Lys Glu Glu Leu Ile Phe Arg Tyr Cys Ser Gly Ser Cys
 20 25 30
 Asp Ala Ala Glu Thr Thr Tyr Asp Lys Ile Leu Lys Asn Leu Ser Arg
 35 40 45
 Asn Arg Arg Leu Val Ser Asp Lys Val Gly Gln Ala Cys Cys Arg Pro
 50 55 60
 Ile Ala Phe Asp Asp Asp Leu Ser Phe Leu Asp Asp Asn Leu Val Tyr
 65 70 75 80
 His Ile Leu Arg Lys His Ser Ala Lys Arg Cys Gly Cys
 85 90

<210> 5
 <211> 93
 <212> PRT
 <213> Mouse

<400> 5
 Cys Val Leu Thr Ala Ile His Leu Asn Val Thr Asp Leu Gly Leu Gly
 1 5 10 15
 Tyr Glu Thr Lys Glu Glu Leu Ile Phe Arg Tyr Cys Ser Gly Ser Cys
 20 25 30
 Glu Ser Ala Glu Thr Met Tyr Asp Lys Ile Leu Lys Asn Leu Ser Arg
 35 40 45

Ser Arg Arg Leu Thr Ser Asp Lys Val Gly Gln Ala Cys Cys Arg Pro
50 55 60

Val Ala Phe Asp Asp Asp Leu Ser Phe Leu Asp Asp Asn Leu Val Tyr
65 70 75 80

His Ile Leu Arg Lys His Ser Ala Lys Arg Cys Gly Cys
85 90

<210> 6

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<400> 6

Cys Val Leu Thr Ala Ile His Leu Asn Val Thr Asp Leu Gly Leu Gly
1 5 10 15

Tyr Glu Thr Lys Glu Glu Leu Ile Phe Arg Tyr Cys Ser Gly Ser Cys
20 25 30

Glu Ala Ala Glu Thr Met Tyr Asp Lys Ile Leu Lys Asn Leu Ser Arg
35 40 45

Ser Arg Arg Leu Thr Ser Asp Lys Val Gly Gln Ala Cys Cys Arg Pro
50 55 60

Val Ala Phe Asp Asp Asp Leu Ser Phe Leu Asp Asp Ser Leu Val Tyr
65 70 75 80

His Ile Leu Arg Lys His Ser Ala Lys Arg Cys Gly Cys
85 90

<210> 7

<211> 94

<212> PRT

<213> Homo sapiens

<400> 7

Cys Gly Leu Arg Glu Leu Glu Val Arg Val Ser Glu Leu Gly Leu Gly
1 5 10 15

Tyr Ala Ser Asp Glu Thr Val Leu Phe Arg Tyr Cys Ala Gly Ala Cys
20 25 30

Glu Ala Ala Ala Arg Val Tyr Asp Leu Gly Leu Arg Arg Leu Arg Gln
35 40 45

Arg Arg Arg Leu Arg Arg Glu Arg Val Arg Ala Gln Pro Cys Cys Arg
50 55 60

Pro Thr Ala Tyr Glu Asp Glu Val Ser Phe Leu Asp Ala His Ser Arg
65 70 75 80

Tyr His Thr Val His Glu Leu Ser Ala Arg Glu Cys Ala Cys
85 90

<210> 8

<211> 94

<212> PRT

<213> Mouse

<400> 8

Cys Gly Leu Arg Glu Leu Glu Val Arg Val Ser Glu Leu Gly Leu Gly
 1 5 10 15

Tyr Thr Ser Asp Glu Thr Val Leu Phe Arg Tyr Cys Ala Gly Ala Cys
 20 25 30

Glu Ala Ala Ile Arg Ile Tyr Asp Leu Gly Leu Arg Arg Leu Arg Gln
 35 40 45

Arg Arg Arg Val Arg Arg Glu Arg Ala Arg Ala His Pro Cys Cys Arg
 50 55 60

Pro Thr Ala Tyr Glu Asp Glu Val Ser Phe Leu Asp Val His Ser Arg
 65 70 75 80

Tyr His Thr Leu Gln Glu Leu Ser Ala Arg Glu Cys Ala Cys
 85 90

<210> 9

<211> 96

<212> PRT

<213> Homo sapiens

<400> 9

Cys Arg Leu Arg Ser Gln Leu Val Pro Val Arg Ala Leu Gly Leu Gly
 1 5 10 15

His Arg Ser Asp Glu Leu Val Arg Phe Arg Phe Cys Ser Gly Ser Cys
 20 25 30

Arg Arg Ala Arg Ser Pro His Asp Leu Ser Leu Ala Ser Leu Leu Gly
 35 40 45

Ala Gly Ala Leu Arg Pro Pro Pro Gly Ser Arg Pro Val Ser Gln Pro
 50 55 60

Cys Cys Arg Pro Thr Arg Tyr Glu Ala Val Ser Phe Met Asp Val Asn
 65 70 75 80

Ser Thr Trp Arg Thr Val Asp Arg Leu Ser Ala Thr Ala Cys Gly Cys
 85 90 95

<210> 10

<211> 96

<212> PRT

<213> Mouse

<400> 10

Cys Arg Leu Arg Ser Gln Leu Val Pro Val Ser Ala Leu Gly Leu Gly
 1 5 10 15

His Ser Ser Asp Glu Leu Ile Arg Phe Arg Phe Cys Ser Gly Ser Cys
 20 25 30

Arg Arg Ala Arg Ser Gln His Asp Leu Ser Leu Ala Ser Leu Leu Gly
 35 40 45

Ala Gly Ala Leu Arg Ser Pro Pro Gly Ser Arg Pro Ile Ser Gln Pro
 50 55 60

Cys Cys Arg Pro Thr Arg Tyr Glu Ala Val Ser Phe Met Asp Val Asn
 65 70 75 80
 Ser Thr Trp Arg Thr Val Asp His Leu Ser Ala Thr Ala Cys Gly Cys
 85 90 95

<210> 11
 <211> 109
 <212> PRT
 <213> MURINE

<400> 11
 Ala Leu Ala His His His His His Asp Tyr Lys Asp Asp Asp Asp
 1 5 10 15
 Lys Gly Ser Cys Arg Leu Trp Ser Leu Thr Leu Pro Val Ala Glu Leu
 20 25 30
 Gly Leu Gly Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala
 35 40 45
 Gly Ser Cys Pro Gln Glu Ala Arg Thr Gln His Ser Leu Val Leu Ala
 50 55 60
 Arg Leu Arg Gly Arg Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro
 65 70 75 80
 Thr Ala Phe Asp Asp Asp Val Thr Phe Leu Asp Asp Gln His His Tyr
 85 90 95
 His Ile Leu Arg Lys His Ser Ala Ala Ala Cys Gly Cys
 100 105

<210> 12
 <211> 90
 <212> PRT
 <213> MURINE

<400> 12
 Cys Arg Leu Trp Ser Leu Thr Leu Pro Val Ala Glu Leu Gly Leu Gly
 1 5 10 15
 Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Gln Glu Ala Arg Thr Gln His Ser Leu Val Leu Ala Arg Leu Arg
 35 40 45
 Gly Arg Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro Thr Ala Phe
 50 55 60
 Asp Asp Asp Val Thr Phe Leu Asp Asp Gln His His Tyr His Ile Leu
 65 70 75 80
 Arg Lys His Ser Ala Ala Ala Cys Gly Cys
 85 90

<210> 13
 <211> 109
 <212> PRT

<213> Mouse

<400> 13

Ala	Leu	Ala	His	His	His	His	His	His	Asp	Tyr	Lys	Asp	Asp	Asp	Asp
1				5					10					15	
Lys	Gly	Ser	Cys	Arg	Leu	Trp	Ser	Leu	Thr	Leu	Pro	Val	Ala	Glu	Leu
			20					25					30		
Gly	Leu	Gly	Tyr	Ala	Ser	Glu	Glu	Lys	Val	Ile	Phe	Arg	Tyr	Cys	Ala
		35					40					45			
Gly	Ser	Cys	Pro	Gln	Glu	Ala	Arg	Thr	Gln	His	Ser	Leu	Val	Leu	Ala
	50					55					60				
Arg	Leu	Arg	Gly	Arg	Gly	Arg	Ala	His	Gly	Arg	Pro	Cys	Cys	Gln	Pro
65					70					75					80
Thr	Ala	Tyr	Glu	Asp	Glu	Val	Thr	Phe	Leu	Asp	Asp	Gln	His	His	Tyr
				85					90					95	
His	Thr	Leu	Gln	Glu	Leu	Ser	Ala	Ala	Ala	Cys	Gly	Cys			
			100					105							

<210> 14

<211> 90

<212> PRT

<213> Mouse

<400> 14

Cys	Arg	Leu	Trp	Ser	Leu	Thr	Leu	Pro	Val	Ala	Glu	Leu	Gly	Leu	Gly
1				5					10					15	
Tyr	Ala	Ser	Glu	Glu	Lys	Val	Ile	Phe	Arg	Tyr	Cys	Ala	Gly	Ser	Cys
			20					25					30		
Pro	Gln	Glu	Ala	Arg	Thr	Gln	His	Ser	Leu	Val	Leu	Ala	Arg	Leu	Arg
		35					40					45			
Gly	Arg	Gly	Arg	Ala	His	Gly	Arg	Pro	Cys	Cys	Gln	Pro	Thr	Ala	Tyr
	50					55					60				
Glu	Asp	Glu	Val	Thr	Phe	Leu	Asp	Asp	Gln	His	His	Tyr	His	Thr	Leu
65					70					75					80
Gln	Glu	Leu	Ser	Ala	Ala	Ala	Cys	Gly	Cys						
				85					90						

<210> 15

<211> 108

<212> PRT

<213> Mouse

<400> 15

Ala	Leu	Ala	His	His	His	His	His	His	Asp	Tyr	Lys	Asp	Asp	Asp	Asp
1				5					10					15	
Lys	Gly	Ser	Cys	Arg	Leu	Trp	Ser	Leu	Thr	Leu	Pro	Val	Ala	Glu	Leu
			20					25					30		
Gly	Leu	Gly	Tyr	Ala	Ser	Glu	Glu	Lys	Val	Ile	Phe	Arg	Tyr	Cys	Ala
		35					40					45			

Gly Ser Cys Pro Gln Glu Ala Arg Thr Gln His Ser Leu Val Leu Ala
 50 55 60
 Arg Leu Arg Gly Arg Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro
 65 70 75 80
 Thr Arg Tyr Glu Ala Val Thr Phe Leu Asp Asp Gln His His Trp Arg
 85 90 95
 Thr Val Asp His Leu Ser Ala Ala Ala Cys Gly Cys
 100 105

<210> 16
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 <213> Mouse

<400> 16
 Cys Arg Leu Trp Ser Leu Thr Leu Pro Val Ala Glu Leu Gly Leu Gly
 1 5 10 15
 Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Gln Glu Ala Arg Thr Gln His Ser Leu Val Leu Ala Arg Leu Arg
 35 40 45
 Gly Arg Gly Arg Ala His Gly Arg Pro Cys Cys Gln Pro Thr Arg Tyr
 50 55 60
 Glu Ala Val Thr Phe Leu Asp Asp Gln His His Trp Arg Thr Val Asp
 65 70 75 80
 His Leu Ser Ala Ala Ala Cys Gly Cys
 85

<210> 17
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<400> 17
 Ala Phe Asp Asp Asp
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<210> 18
 <211> 5
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<400> 18
 Ala Tyr Glu Asp Glu
 1 5

<210> 19
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<400> 19
 Arg Tyr Glu Ala
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<210> 20
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<400> 20
 Tyr His Ile Leu Arg Lys His
 1 5

<210> 21
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 21
 Tyr His Thr Val His Glu Leu
 1 5

<210> 22
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 <212> PRT
 <213> Homo sapiens

<400> 22
 Trp Arg Thr Val Asp Arg Leu
 1 5

<210> 23
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 <212> PRT
 <213> Homo sapiens

<400> 23
 Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala Glu Leu Gly Leu Gly
 1 5 10 15
 Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala Leu Ala Arg Leu Gln
 35 40 45
 Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys Arg Pro Thr Ala Phe
 50 55 60
 Asp Asp Asp Val Ala Phe Leu Asp Asp Arg His Arg Tyr His Ile Leu
 65 70 75 80
 Arg Lys His Ser Ala Ala Ala Cys Gly Cys
 85 90

<210> 24
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 <213> Homo sapiens

<400> 24
 Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala Glu Leu Gly Leu Gly
 1 5 10 15

Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala Leu Ala Arg Leu Gln
 35 40 45
 Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys Arg Pro Thr Ala Tyr
 50 55 60
 Glu Asp Glu Val Ala Phe Leu Asp Asp Arg His Arg Tyr His Thr Val
 65 70 75 80
 His Glu Leu Ser Ala Ala Ala Cys Gly Cys
 85 90

<210> 25
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 <213> Homo sapiens

<400> 25
 Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala Glu Leu Gly Leu Gly
 1 5 10 15
 Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr Cys Ala Gly Ser Cys
 20 25 30
 Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala Leu Ala Arg Leu Gln
 35 40 45
 Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys Arg Pro Thr Arg Tyr
 50 55 60
 Glu Ala Val Ala Phe Leu Asp Asp Arg His Arg Trp Arg Thr Val Asp
 65 70 75 80
 Arg Leu Ser Ala Ala Ala Cys Gly Cys
 85

<210> 26
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 <213> Homo sapiens

<400> 26
 Ala Leu Ser Gly Pro Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala
 1 5 10 15
 Glu Leu Gly Leu Gly Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr
 20 25 30
 Cys Ala Gly Ser Cys Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala
 35 40 45
 Leu Ala Arg Leu Gln Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys
 50 55 60
 Arg Pro Thr Ala Phe Asp Asp Asp Val Ala Phe Leu Asp Asp Arg His
 65 70 75 80
 Arg Tyr His Ile Leu Arg Lys His Ser Ala Ala Ala Cys Gly Cys Gly
 85 90 95

Gly

<210> 27
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 <213> Homo sapiens

<400> 27
 Ala Leu Ser Gly Pro Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala
 1 5 10 15
 Glu Leu Gly Leu Gly Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr
 20 25 30
 Cys Ala Gly Ser Cys Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala
 35 40 45
 Leu Ala Arg Leu Gln Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys
 50 55 60
 Arg Pro Thr Ala Tyr Glu Asp Glu Val Ala Phe Leu Asp Asp Arg His
 65 70 75 80
 Arg Tyr His Thr Val His Glu Leu Ser Ala Ala Ala Cys Gly Cys Gly
 85 90 95
 Gly

<210> 28
 <211> 96
 <212> PRT
 <213> Homo sapiens

<400> 28
 Ala Leu Ser Gly Pro Cys Gln Leu Trp Ser Leu Thr Leu Ser Val Ala
 1 5 10 15
 Glu Leu Gly Leu Gly Tyr Ala Ser Glu Glu Lys Val Ile Phe Arg Tyr
 20 25 30
 Cys Ala Gly Ser Cys Pro Arg Gly Ala Arg Thr Gln His Gly Leu Ala
 35 40 45
 Leu Ala Arg Leu Gln Gly Gln Gly Arg Ala His Gly Gly Pro Cys Cys
 50 55 60
 Arg Pro Thr Arg Tyr Glu Ala Val Ala Phe Leu Asp Asp Arg His Arg
 65 70 75 80
 Trp Arg Thr Val Asp Arg Leu Ser Ala Ala Ala Cys Gly Cys Gly Gly
 85 90 95